



PACIFIC NORTHWEST NATIONAL LABORATORY (PNNL)

**Report from the DOE
Voluntary Protection Program
Recertification Review (at the STAR level),
August 19, 2004**



U.S. Department of Energy
Office of Environment, Safety and Health
Office of Corporate Performance Assessment
Office of Quality Assurance Programs
Washington, D.C. 20585

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"...Some of us will serve in government for a season; others will spend an entire career here. But all of us should dedicate ourselves to great goals: We are not here to mark time, but to make progress, to achieve results, and to leave a record of excellence."

— **George W. Bush**
President of the United States
October 15, 2001
Constitution Hall, Washington, DC

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Abbreviations and Acronyms

| | |
|-----------------|---|
| AED | Automated External Defibrillators |
| ATS | Assessment Tracking System |
| BLS | Bureau of Labor Statistics |
| CAIRS | Computerized Accident/Incident Reporting System |
| CSM | Cognizant Space Manager |
| DOE | U.S. Department of Energy |
| DOE-VPP | U.S. Department of Energy Voluntary Protection Program |
| DOE-HQ | U.S. Department of Energy Headquarters |
| EJTA | Employee Job Task Analysis |
| ES&H | Environment, Safety, and Health |
| HAMTC | Hanford Atomic Metal Trades Council |
| IOPS | Integrated Operating System |
| ISM | Integrated Safety Management |
| ISMS | Integrated Safety Management System |
| OII | Operations Improvement Initiative |
| O&M | Operations and Maintenance |
| ORPS | Occurrence Reporting Process System |
| OSHA | Occupational Safety and Health Administration |
| PNNL | Pacific Northwest National Laboratory |
| PPE | Personal Protective Equipment |
| R2A2 | Roles, Responsibilities, Accountabilities and Authorities |
| Rad Con | Radiological Control |
| SHIMS | Safety and Health Information Management System |
| SBMS | Standards-Based Management System |
| S&H | Safety and Health |
| VPP | Voluntary Protection Program |
| WET | Worker Eligibility and Training System |

Executive Summary

The DOE-VPP onsite review of the Pacific Northwest National Laboratory (PNNL) for recertification was conducted from August 16-19, 2004 at Richland, WA. Noteworthy during the past year was a congressionally directed OSHA inspection. From September 18-29, 2003, twenty-one OSHA inspectors conducted a compliance inspection at PNNL. In addition to the 490 initial issues that were identified, this inspection praised PNNL for its exceptional biological laboratories, and their excellent Medical, Radiological Control, Personnel Protective Equipment, Respiratory Protection, and Lock-Out-Tag-Out programs.

The Review team (Team) found these OSHA-related issues and associated corrective measures taken by PNNL demonstrate the STAR quality of performance resident at PNNL.

The following summarizes the review team's other observations and analysis.

THE OSHA INSPECTION RESPONSE

The Team made a singular effort to examine the actions and the general response of PNNL to the OSHA inspection performed by OSHA in the fall of 2003. At the behest of Congress, as one of ten Office of Science facilities, OSHA directed a team of 21 inspectors to perform a compliance inspection of PNNL. A large number of findings were generated, but none posed imminent danger. All were properly addressed. Forty percent were electrical issues. Some received immediate correction. Some were more recommendations than findings. Half were minor. Many were legacy issues in facilities built in the 1950s. OSHA also praised some inspected areas. Only ten items required functional changes to technical safety programs; these were in medical and exposure monitoring enhancements. The Team found that PNNL's response was comprehensive and professional. Inspection and self assessment techniques for routine surveys have been refined. Further, PNNL has embraced the validation provided by OSHA of their VPP, and welcomes review by external reviewers.

Management Leadership

The Team found high degree management commitment to safety and health (S&H). Managers are personally committed to VPP. The leadership is capable, competent and well directed. The Team found leadership, fully executed at the top and in the field. The Director of PNNL and other managers visibly participate in safety programs, and have successfully established an organization to implement an Integrated Safety Management System (ISMS) and VPP. The PNNL management believes that all accidents are preventable and encourage a safety culture based on an "injury-free workplace." VPP is considered as a method to measure the success of ISMS with the view that the two programs complement each other.

Employee Involvement

Employees are passionate about work, their company, and their coworkers. They are mature, well seasoned, well-qualified and competent. They are aware of their job hazards and how these hazards are mitigated. The Team found that the workers at PNNL are cooperative and ready to follow S&H

procedures and processes. All employees understand that they have the “Stop Work” authority if unsafe conditions exist. They have no fear of reprisal and are ready to raise safety issues through a variety of communication means. PNNL continues to satisfy the VPP requirements for Employee Involvement.

Worksite Analyses

The VPP onsite review team found that PNNL satisfies the requirements of DOE-VPP criteria. The worksite analysis processes are structured and implemented to control hazards to the workers, the environment, and the public. Hazard analysis processes incorporated a variety of tools. A comprehensive baseline hazards analysis has been completed by S&H professionals for all facilities. Accident investigation and lessons learned processes are developed and implemented. The site has established trending of injury and non-injury S&H data. Results are used for continuous improvement action development and are communicated to employees. Additionally, the PNNL VPP Steering Committee conducts a vigorous and comprehensive annual self-assessment that produces an Annual VPP Program Evaluation report, which has been incorporated into the Lab-level Safety Performance Improvement Initiative.

Hazard Prevention and Control

The Team found that PNNL satisfies the requirements of hazard prevention and control. Their Standards-Based Management System (SBMS) is an automated directory of S&H requirements that is available to all employees. These requirements address both the general and the specific job hazards and hazards mitigation. SBMS addresses subject areas for general use and provides methods for project/location information to be tailored for specific application. The Integrated Operations System (IOPS) allows workers specific control of work plans and associated hazards at the bench level of performance. The purpose of IOPS is to enhance work job empowerment. The VPP Steering Committee recently deployed blood pressure monitors around the Lab, and sponsored the inclusion of Automated External Defibrillators (AED) as part of the emergency medical program. PNNL also uses a Roles, Responsibilities, Accountabilities and Authorities (R2A2) system to further work control and authority over job/task safety and health. Research work control utilizes an integrated process that identifies and mitigates hazards, and authorizes specific work using electronic tools including Electronic Prep & Risk and IOPS. This process is used by project managers, product line managers and workers to accomplish their responsibilities for each planned task. It helps them assess risks, plan risk mitigation, authorize work, perform work as authorized, and feedback changes and lesson learned.

Safety and Health Training

PNNL continues to satisfy the safety and health training requirements. Training is comprehensive. It addresses all types of managers, workers and subcontractors.

Conclusion

The Team concludes that PNNL has satisfied the requirements for participation in DOE-VPP, and recommends that DOE approve the recertification to STAR.

I. Introduction

The Department of Energy Voluntary Protection Program (DOE-VPP) onsite review of PNNL was conducted during August 16-19, 2004, at the Hanford Site in Richland, Washington. Pacific Northwest National Laboratory (PNNL), operated by Battelle Memorial Institute for the U.S. Department of Energy, is an internationally recognized research facility that provides leadership in integrating chemical, physical and biological sciences to rapidly translate discoveries into solutions to challenges in energy, national security and in the environment. It is operated by the Battelle Memorial Institute. The Department of Energy's Pacific Northwest Site Office (PNSO) in Richland, Washington provides guidance to PNNL on a regular basis, and has oversight responsibility.

PNNL is organizationally dispersed on 361.8 acres in 91 buildings across two major areas in Richland, Washington: the 300 area and the North Richland research campus. PNNL's operations are primarily organized into six major research, and two support directorates. It employs over 3800 with a variety of types of employees from high educated scientists and engineers to union organized craft workers. The STAR level recognition was initially awarded to the site in June 2001.

The Team evaluated the safety programs of PNNL against the Protocol for DOE-VPP Star Site Recertification of the DOE-VPP. The DOE-VPP recertification Team consisted of safety professionals from DOE Headquarters, Office of Environment, Safety and Health (HQ/EH) and Office of Science (HQ/SC), PNSO, Richland Operations Office, and two line employees from two different Hanford Site contractors. (See Appendix for a roster of the Team.) During the site visit, the Team evaluated representative samplings of relevant safety documents and conducted interviews of employees (both bargaining and non-bargaining) and management to evaluate and verify the information necessary to perform the recertification review.

II. Injury and Illness Rate Information and Trends

A review of the Occupational Safety and Health Administration (OSHA) 200/300 logs was made. The rates below include all PNNL employees and on-site subcontractors.

| INJURY AND ILLNESS DATA FOR PNNL (including subcontractors) | | | | | |
|---|------------------------------------|------------------------|----------------|---------------------------------|-------------------------------------|
| Calendar Year | Days Away, Restricted, or Transfer | Total Recordable Cases | Employee Hours | Lost Workday Case Incident Rate | Total Recordable Case Incident Rate |
| 2001 | 33 | 70 | 6,645,609 | 1.0 | 2.1 |
| 2002 | 36 | 62 | 6,719,390 | 1.1 | 1.8 |
| 2003 | 33 | 53 | 6,791,985 | 1.0 | 1.6 |
| 3-Year Average | | | | 1.0 | 1.8 |
| Bureau of Labor Statistics (BLS) average for SIC 873 | | | | 1.0 | 2.3 |
| PNNL percent below BLS rate | | | | 0% | 21.8% |

The information on the OSHA 200/300 logs supports the data provided in the PNNL self-evaluations, the organization's first report of injury forms and other recordkeeping documents. A health and safety professional is responsible for classifying all injuries and illnesses for OSHA recording and is responsible for maintaining the OSHA log. Injury/illness data is submitted for inclusion in the DOE HQ Computerized Accident/Incident Reporting System (CAIRS). Routinely, the data output from CAIRS is checked against the actual data reported and submitted. This ensures that accurate information is being presented in the CAIRS database. The staff understands the recordkeeping requirements including the 29 CFR 1904 recordkeeping changes that went into effect in January 2002.

III. Summary of Performance Related to VPP Tenets and Sub-elements

The level of management leadership, employee involvement, worksite analysis, hazard prevention & control, and S&H training found at this site meets the DOE-VPP criteria for STAR level recognition. The major elements of the Department's Voluntary Protection Program and an evaluation of the PNNL performance in those key areas are addressed and described below.

A. Management Leadership

Commitment by the PNNL senior management is demonstrated in strong safety and health policy statements, allocation of resources necessary to support all S&H program activities, attention to employee identified S&H concerns, and active participation in safety committee activities. Further, it was observed and verified that PNNL management – at all levels – demonstrates its commitment to a safe and healthful workplace for all employees through the implementation of ISMS and VPP. The senior most level of management at PNNL is visible and actively participates in the S&H program.

PNNL is organized to support its roles, responsibilities, and policies. Roles and responsibilities for employees and managers are identified in position descriptions and the labor bargaining agreements and in the R2A2 system. Accountability is demonstrated in performance evaluations for non-bargaining employees and managers, as well as through the means/methods identified in the union agreement for bargaining unit employees. The mix of line, facility and cognizant space managers provide PNNL work spaces with an overlapping oversight of both work space safety and operations safety. Resources are budgeted and allocated at sufficient levels.

An integrated framework has been established to provide a template to ensure the S&H planning process is comprehensive. The SBMS and the IOPS are the core of the management delegation and control of work and work safety. The Project Risk Management Process integrates and executes this work authority into task execution. The PNNL Self-Assessment and the subsequent VPP Annual Report are fully integrated with a well developed scoring system that trends performance by sub tenet.

These annual program evaluations have been conducted using VPP criteria and ISMS core functions and guiding principles. The results of annual program evaluations and other S&H trending data are used by PNNL to develop improvement strategies/actions for the coming year. The last annual VPP program review was completed in January 2004.

The OSHA Inspection of September 2003 was a major indicator of PNNL management commitment to VPP. Of the 490 identified issues 440 were against OSHA standards with 44 others classified as recommendations. Six of the original 490 were later voided by OSHA and no findings were regarded as posing imminent danger. In all cases PNNL management worked immediately and effectively with the VPP structures and the VPP Steering Committee to address and close out these issues.

Employee orientations are well developed and implemented effectively at all levels, including employee notification of PNNL participation in VPP.

PNNL meets the basic requirements of the Management Leadership tenet and its sub-elements as described above.

B. Employee Involvement

The information gathered for this portion of the report relies heavily on observations of employees in the workplace while conducting their routine duties, and on interviews of employees. Employees generally feel that they own the safety culture. Employees at all levels feel comfortable to raise concerns and participate in their resolution. Employees in the bargaining unit feel that barriers to communication to and from management are minimal. Communications are for all employees regarded as very effective.

Workers were candid and showed no fear in talking with the Team during interviews. The Team interviewed approximately 55 bargaining unit employees and about an equal number of exempt employees. All employees indicated that they understood their rights and responsibilities, and are very knowledgeable about their responsibilities regarding safety and health. Interviews confirmed that a strong safety culture exists at all levels, and employees feel empowered to voice safety concerns. Taking safety home was voiced (by bargaining and non-bargaining employees) as a major improvement change over the past three (3) years.

Employees are actively involved in a variety of safety-related committees at PNNL, including the VPP Steering Committee, the Electrical Safety Committee, the Lock and Tag Committee, and the PNNL/HAMTC Laboratory Safety Committee. Employees are proud of their worksite and feel safety is integral to maintaining a world-class safeguards and security organization.

The OSHA Inspection in the fall of 2003 was also an exercise of VPP employee ownership for the PNNL safety and health programs. Most noted items were in electrical safety. The next were in egress, machinery and machine guarding; toxic and hazardous substances and in construction safety. Half were minor and fewer than ten required functional alterations to safety programs. In all cases, the operating organizations, management systems, and VPP employee driven safety infrastructure was effective for addressing these OSHA issues.

Communication with employees for safety and health in the workplace remains strong. For non-employees or for new hires, attention is needed to anticipate their unique working circumstances. These groups include foreign nationals with language difficulties, students with summer internships, contractors with short duration tasks and with new employees hired directly from educational institutions. In these instances, additional efforts are needed to anticipate and support initial orientation to PNNL safety and health programs within the laboratory operations. Such efforts are typically provided by Cognizant Space Managers in the context of the IOPS tool for bench level mitigation of hazards.

PNNL also needs to continue efforts to extend invitations and incentives to those employees not fully engaged in their VPP. More personal contact by safety professionals with the scientists/researchers to improve their safety dialogue/consulting to support the execution of work in each laboratory. This personal investment of human contact may strengthen the sense of VPP value-added for a greater number of PNNL laboratory workers.

For craft workers, the value-added of VPP was significantly noted in all their interviews. Both in the implementation and participation of VPP, craft workers are capable and effective advocates for VPP.

PNNL meets the basic requirements of the Employee Involvement tenet and its sub-elements as described above.

C. Worksite Analysis

New or modified facility designs, operations, processes and training at PNNL are reviewed and analyzed to identify and mitigate potential hazards before work or training is started. Comprehensive baseline hazard surveys have been completed; updates/reviews are in progress.

Inspections of PNNL work areas are performed by cognizant space managers, subject matter experts, and line managers; results are documented. PNNL uses a general approach of marrying ISM disciplines with a “bench-top” perspective to control of the work site. Their IOPS employs an “empowered work force approach to safety.”

R&D activity planning outside of the office environment is performed in the context of IOPS or by projects if work is conducted outside of IOPS controlled workspaces. All maintenance work performed by PNNL employees is planned using a documented job planning process specified by procedure ADM-016. Daily pre-job briefings are held for maintenance and installation activities.

Employees are encouraged and expected to identify and report conditions that compromise or are not in compliance with company S&H programs. It is clear that the “feedback element” of the process – overall – is in place and effective.

PNNL systematically investigates injury and near-miss events, including first-aid type injuries, and occurrences. A formal lessons learned program is in place. Trending of safety & health event data is performed regularly and communicated. As previously mentioned, trending of inspection data and employee reports of hazards needs attention.

PNNL meets the basic requirements of the Worksite Analysis tenet and its sub-elements as described above.

The information obtained during interviews conducted with researchers, CSMs, crafts, and maintenance personnel demonstrated a strong knowledge of the safety system (SBMS, IOPS, EPR, and MIT). CSMs demonstrated strong understanding of the hazards, as well as where to obtain the information on the mitigation of hazards. Stop Work authority was understood and had been used in many cases. We also found support for the enforcement of the system. Interviews held with crafts and maintenance personnel reflected a strong knowledge of the safety rules, and evidence that the flow of information to and from their management was working well.

Interviews

A trades concern was that PNNL emphasis on limiting chemical exposure and enhancing environmental protection resulted in the replacement of typical custodial cleaning products with “green chemicals” which required much more rigorous work by the janitors and resulted in an increased potential for ergonomic incidents.

The researchers felt the quarterly review of IOPS procedure was good for areas with large turnovers but, not long term projects that do not utilize students or other transient workers.

A language barrier (non-English) was stated to be non-problematic due to the high level of academic writing and reading by foreign researchers.

Interviewers were impressed with the willingness of safety and health and IOPS personnel to modify and work with CSMs to improve procedures.

Although worksite analysis is improving some opportunities for improvement were identified in the January 2004 VPP report. Based on interviews with Rad Con program staff, there has been some improvement in addressing worker awareness of hazards in their workspaces. (Weakness: there are gaps identified in the processes to verify that staff members are fully cognizant of expectations to control all hazards.) Improvements have been made through VPP Steering Committee communications and the use of the IOPS Hazards Summaries which are posted outside of each Lab.

Improvements have been made for capturing results of Self-Assessments and tabulating the results up to an institutional level. A Corrective Action Management Improvement Team has been working on upgrading a tracking and trending system for common reporting. (Weakness: processes for capturing results of self-assessments and rolling those results up to provide meaningful information about program performance at the institutional level has gaps and is otherwise not well developed.)

D. Hazard Prevention & Control

PNNL has eleven safety professionals and safety representatives on staff. Certified S&H personnel in a variety of areas are immediately available to staff. PNNL has strong S&H rules in the hierarchy of policies and procedures; safety and health rules are used to guide and enforce/reward conformance to policies and requirements.

PNNL uses three overlapping, integrated tools used to ensure hazards are identified and controlled in the inception stage. The first and most broad of the three programs is the Standards-Based Management System (SBMS), which feeds into the IOPS. IOPS is the more refined hazard recognition tool tailored towards the workbench. The third and equally important tool is the worksite Hazard Assessment Summary, which communicates the hazards of a workspace to those needing unescorted access. The above three tools overlap enough to ensure nothing is missed but, also contains too much overlapping causing redundancy. The use of the Electronic Prep & Risk process inherent in work planning approval that verifies and validates hazard recognition and prevention through the last line of defense e.g. proper PPE required for specific jobs.

Site policy regarding the use of personal protective equipment (PPE) is strong. PPE is made available including gloves, boots, safety glasses, hearing protection, and respirators. Where PPE is needed, requirements for its use are integrated into worksite hazard summary, work package, and procedures.

The Site has a strong emergency preparedness program. PNNL employees are routinely involved in drills and exercises. PNNL employees follow the requirements of “host” facilities regarding radiation protection training and program requirements when they are working in facilities controlled by others. PNNL has a strong medical program founded on a well-established and close relationship with the site occupational medical organization. PNNL policies and procedures are based on appropriate DOE contract clauses, orders, contract documents, and industry standards.

PNNL meets the basic requirements of the Hazard Prevention & Control tenet and its sub-elements as described above.

E. Safety & Health Training

The S&H training processes used by PNNL are structured and implemented according to ISM core functions and guiding principles. These processes adequately train workers, supervisors, and managers in recognizing hazards and performing their work safely. Employees who were

interviewed during this review, as well as observations made by the Team, confirmed that these processes are used and understood by PNNL employees throughout the organization.

PNNL meets the basic requirements of the Safety Health Training tenet and its sub-elements as described above.

IV. Outreach

PNNL outreach effort has been strong and consistent throughout the past three years. The Team and the annual VPP Status report identified several ongoing programs. Listed below are a few that are commendable.

1. PNNL provided support for Lawrence Berkley National Laboratory, Brookhaven National Laboratory, the Los Alamos National Laboratory, and the Argonne National Laboratory in their quest for VPP recognition.
2. Consulted with Marsh and McClennan Insurance Company regarding establishment of a VPP program for one of their clients.
3. Supported a mentoring request from Boeing in Seattle, Washington and at Cape Canaveral Air Force Station in Cape Canaveral, Florida.
4. PNNL has been recognized for participation in the yearly Hanford Safety EXPO.
5. PNNL supported the DOE Richland Office by providing information about blood pressure monitors.
6. PNNL was recognized in the Best Practices Dictionary for the Voluntary Protection Program Participants association (VPPPA).
7. PNNL provided support to the United Foundry Company for their VPP programs.
8. Supported the Oak Ridge Institute of Science and Education (ORISE) by participating on their VPP On-Site Review.
9. PNNL assisted the Tri-Cities Schools systems with class room training for safety.
10. PNNL regularly participates in VPPPA regional and national meetings.

V. Strengths

During this review, the Team noted several strengths within PNNL that are indicative of a healthy and comprehensive safety culture. The ISMS principles and methodologies are evident in these behaviors and practices, and illustrate the depth and scope to which PNNL values the five main tenets of VPP. Listed below are the strengths noted by Team members during this review.

1. PNNL has established and institutionalized continuous improvement, with an aggressive VPP Steering Committee, extensive on-line infrastructure, and deeply committed management team.
2. PNNL has strong and pervasive ownership for its VPP, with a variety of employee roles and responsibilities, provision of resources, and exceptional support processes.
3. PNNL developed and now operates an effective Self-Assessment regimen with a high level of universal recognition training, aggressive general participation, and effective follow-up and lessons learned.
4. PNNL has instituted a cognizant space manager role to support implementation and monitoring of worksite safety.
5. PNNL has established an especially strong on-line requirements baseline for worksite application – SBMS/IOPS.
6. SBMS is a superb employment of advanced technology for safety and health in the workplace.
7. Strong employee peer groups that serve to evaluate hazard prevention and control at the bench level.
8. Dedicated, seasoned, responsive, and qualified ES&H work force that performs at a superior level.
9. PNNL utilizes the Laboratory developed Integrated Operations System (IOPS) to focus on the hazards of a specific area, the methods of control, the controlling elements and the authority over the specified area. The Cognizant Space Managers (CSM) that we interviewed receive training and know the expectations for the area they control, and exercise authority over those operations in their areas. Information as to hazards present, operations that can be conducted safely, the training required, and permission to enter are conveyed by the IOPS system. They review IOPS at least once every three months to reflect any changes. Therefore, changes can be and are communicated to the IOPS coordinators, researchers, and the owner (CSM). All know the rules, rights and expectations to achieve a safe work area, as well as crafts that service the lab areas. This exceeds typical safety programs which use a fixed written, hard to change lab-wide approach. The VPP (IOPS) approach is applicable, flexible and specific to the hazards present in the work spaces. The information is timely, accurate, and easily attainable by the researchers, maintenance, and enforced by the CSM. A major plus is the ease and quick turnaround in which a requirement can be changed, modified, or expanded based on the experience of all the users.

10. Interviews held with craft workers stated that VPP information has been provided to the workforce through the SBMS, emails, the porcelain press, and direct feedback in monthly staff meetings. Most of the craft workers indicated that they had Monday morning meetings with their supervisors and monthly safety meetings. VPP Steering Committee information is routinely shared in the monthly staff meetings. Near-misses and other site-wide or complex-wide events are also addressed and discussed in safety meetings. Two workers stated that safety meetings were not occurring on a regular basis since their group had been reorganized.
11. During the interviews conducted with craft workers the input on safety training was held with the highest regard. PNNL's safety programs were stated to be far superior to any other programs by those workers who had come to the Laboratory following employment in private industry.
12. Interviews held with craft workers reflected that the focus on 24-hour safety was a positive outfall from implementation of the VPP program. Workers shared that their immediate supervisors genuinely cared for them and were concerned that they work safely.

VI. Best Practices

The Team commends PNNL for its continuation as a STAR participant in the Department of Energy Voluntary Protection Program. The Team recognized a majority of PNNL ES&H programs as long-term assets that provide excellent value and sufficient worker and management involvement. PNNL ES&H programs effectively integrate and implement best practices which have allowed PNNL employee involvement to evolve and stabilize a strong safety culture. Examples of PNNL programs and processes best practices are:

1. Interviews conducted with maintenance, craft workers, researchers, and CSMs addressed previous places of employment in their field, years worked for PNNL, professional conferences and collaborations with other Federal and private entities. The general consensus indicated the VPP and PNNL IOPS programs were superior and much more flexible than other systems they had experience with. In general, the ability to stop work, concern for their co-workers (regardless of pay grade), and flexibility to the work performed indicated a desirable system was in place and working. In response to a question about IOPS work and other laboratories there might be draw backs. A draw back was the typical 'not invented here' syndrome that exists in DOE and would their management support the additional costs of such a program. Interviews held with crafts, maintenance, researchers, and CSMs reflected uniform agreement that previous job experiences would have been safer and more comprehensive with an IOPS approach and the SBMS system in place.
2. The American Chemical Society meetings for Analytical Chemistry held discussions on the IOPS system. The IOPS system and its approach were well received. Additionally, the Electronic Prep & Risk (EPR) materials were augmented with existing rules for a special high-pressure experiment. Ownership was established in IOPS with the ability to revise, update, and collaborate with others to improve methods.
3. PNNL has a tradition of pioneering approaches and methods to enhance bench-level safety and health. These have included: ergonomic program, PREVENT, and Works@fe.
4. PNNL makes a significant investment in support, tools, and technology. These include: Mapping Information Tool, Standards-Based Management System, and IOPS.
5. PNNL conducts aggressive communication activities. These include: top-down-bottom-up communications, empathy for the bench work perspective, and emphasis on mutual respect and communications.
6. PNNL's VPP Steering Committee has assisted in the procurement and dissemination of AEDs and blood pressure monitors in the workplace.

VII. Areas for Improvement

Although the Team recognizes that PNNL has implemented many good programs and practices, as with any healthy continuous improvement program, there are areas for improvement within the safety arena. The following items are areas where the Team noted room for improvement:

1. Generally conducted reviews, performed by individuals knowledgeable of operations and sophisticated processes present in advanced research environments are not performed in a consistent and frequent timeframe. The VPP program augmented by the IOPS system and the SBMS greatly improves the situation. Research, DOE and Industrial Standards of American National Standards Institute (ANSI), as well as, the 'Lessons Learned experience' are baseline for the SBMS system. The integration of a system to improve the various levels of crafts, maintenance, researchers, and students is achieved by IOPS. The key element in PNNL program is the level of input, speed of change, and timely review. Actual users of the space termed CSMs, who are senior level researchers themselves, and work in their specific areas, are required to be trained in SBMS, and with current operating experience actually regulate their areas. The ability to stop work, change rules and re-construct operations in their areas accelerates improvements and the essence of work performed. The VPP attitude, speed of response to make changes for craft, maintenance, safety input and short turnaround is not found anywhere else in the DOE complex.

Therefore, the improvements are continuously generated by those involved in the work and reflect their experience, concerns and needs for improvements.

2. Workload on the field S&H staff is overwhelming. There is a need to evaluate the current workload, assess priorities, and make adjustments as needed.
3. Streamline and improve the user-friendliness of the electronic infrastructure (SBMS, IOPS).
4. Streamline the Rad Con procedures used by RCTs in the workplace to allow efficient application.
5. Evaluate and improve the communications across PNNL with emphasis on the demonstration of the value added by maintaining VPP status.
6. Evaluate the drive to apply (green) chemicals in the workplace, and their overall effect on other hazards (ergonomics).
7. Assess unusual PPE applications for specialize work (i.e., caps, sunscreens, work circumstances)

VIII. Conclusion

The Team found that PNNL continues to meet and maintain a S&H program addressing the basic tenets of DOE-VPP.

The past three years since the award of the STAR recognition to PNNL have been significant and influential times for PNNL and its VPP. The OSHA inspection in September 2003 is a significant indicator of both the quality of safety at PNNL and the quality of the responsiveness of PNNL's STAR VPP.

The Team recommends that the Pacific Northwest National Laboratory be re-certified as a DOE-VPP STAR site.

Appendix

DOE-VPP Review Team Assignments Pacific Northwest National Laboratory

August 16-19, 2004

| Name | Organization | Areas of Responsibility * |
|---|-----------------------------|--|
| David M. Smith David.smith@eh.doe.gov (301) 903-4669 | DOE-HQ – EH-31 | Team Leader Management Leadership Safety and Health Training |
| Rex J. Bowser Rex.bowser@eh.doe.gov (301) 903-2641 | DOE-HQ – EH-31 | Deputy Team Leader Hazard Prevention & Control |
| Michael F. Teresinski Michael.teresinski@science.doe.gov (301) 903-5155 | DOE-HQ – SC- 72 | Worksite Analyses Management Leadership |
| Theresa L. Aldridge Theresa_L_Aldridge@rl.gov (509) 372-4508 | DOE – PNSO | Health Physics Worksite Analyses |
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* All team members participated in the evaluation of “employee involvement” during this review.

